

1 Does family background impact driving attitudes and risky behaviours? An investigation on
2 Chinese young drivers

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8 **Abstract:** The rapid pace of motorisation in China has been well documented, as has the
9 large road trauma burden the Chinese citizens are facing as a result. China's unique political
10 system represents an important consideration in helping reduce road trauma, yet political
11 factors have not been previously investigated in this context. Recently, emerging issues on
12 the road involving the adult children of politically powerful families have become a serious
13 social problem in China, and have drawn widespread media and public attention. This study
14 took a novel approach to examining factors associated with risky attitudes and risky road use
15 in China by investigating the economic and political background status of a sample of young
16 Chinese drivers. An online survey was conducted in May 2015 with a sample size of 476
17 Chinese young drivers from across the country, aged between 18 and 28, including 305 males
18 and 171 females. The results suggest that for participants who reported having a familial
19 political background, more risky driving behaviours were reported among those participants
20 who reported more impact on their life from that political background; while for participants
21 without political background, higher personal income was associated with more risky driving
22 behaviours. The findings are discussed in light of China's political management system and
23 potential education opportunities for young drivers.

24 **Keywords:** Road safety; Young drivers; Driving attitude; Risky behaviour; Economic
25 background; Political influence

26
27 **1. Introduction**

28 Road trauma is an important public health issue, which has been increasingly recognised by
29 governments and institutions internationally. Numerous studies have been conducted to
30 investigate causes and consequences of road crashes (e.g., Zheng et al., 2010; Nordfjarn et al.,
31 2014; Vardaki & Yanniss, 2013; Zheng, 2012; Roshandel et al., 2015). In China, recent
32 decades have seen dramatic changes in the road trauma burden. For instance, annual road
33 crashes increased from approximately 6,000 in 1951 to 413,000 in 1999; meanwhile, the
34 annual injuries caused by road crashes increased from approximately 5,000 to 286,000, and
35 annual fatalities increased from 852 to approximately 84,000 in the same time period (Wang,
36 et al., 2003). Nearly 100,000 people were killed on the road each year from 2001 to 2007 in
37 China (Loo et al., 2011), equivalent to about 274 fatalities per day; and 58,539 people in
38 China were reported being killed in road crashes in 2015 alone (WHO, 2015).

39 According to data from National Bureau of Statistics of China, the number of nationwide
40 licensed car drivers had reached 248 million, and the total motorway length had reached
41 111.9 thousand kilometres by 2014 (National Data, 2015). In particular, because of China's
42 rapid economic growth during the past 30 years (i.e., with an average annual GDP growth
43 rate above 10%) (USA Today, 2007), many Chinese families can afford to buy cars for
44 themselves and their children for the first time (He et al., 2013). Although the official data

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1 about licensed drivers in a specialised age group are unavailable, evidence has shown that
2 novice drivers in China are continuously increasing (Zhang et al., 2013). In turn, the number
3 of road crashes and resulting injuries and fatalities in China involving young drivers is
4 rapidly growing (Baidu Wenku, 2015). International research has shown that misjudging the
5 speed of oncoming vehicles, driving while fatigued and active punishment avoidance are
6 common among young drivers (Weiss et al., 2014). In addition, as a prevailing habit among
7 young drivers - phone use (including texting) while driving - has been shown to lead to a
8 significant increase of the reaction time due to driver distraction and delayed reaction (Yannis
9 et al., 2014; Saifuzzaman et al., 2015). While the body of evidence about the risks associated
10 with young drivers is substantial, very little research in this area has been conducted in China.

11 “Second Rich and Powerful Generation” (SRPG) is a novel Chinese term, which is defined as
12 a young person who has grown up with an economically rich and/or politically powerful
13 family background (Baidu Baike, 2015a; 2015b). In recent years, emerging issues on the road
14 involving SRPG drivers have become a serious social problem in China with severe injuries
15 and fatalities, and it has drawn wide attention from the media and public. For example, on
16 October 16 2010, after a luxury car crashed into two college students on a campus because
17 the driver was speeding and drunk-driving. One student was killed and one was critically
18 injured. The 22-year-old driver was reported to have shouted to the witnesses who angrily
19 stopped his car, “do whatever you want, no harm to me because my father is xxx (a deputy
20 director of the local public security bureau)” (Song & Deng, 2012). On October 20 2010, a
21 college student from a rich family crashed into a woman and then stabbed her to death when
22 he found that she was recording his license plate number (Trevaskes, 2012).

23 Media reports of such road crashes often emphasise the economic or political background of
24 SRPG drivers, which are the most significant features that distinguish them from general
25 drivers. However, very little research has investigated the potential relationship between
26 drivers’ economic and political backgrounds and their driving attitudes and behaviours. One
27 possible reason is that these factors do not play a big role for drivers in developed countries,
28 where much of the road safety research has been conducted. However, the case in developing
29 countries, especially in countries with long traditions, deep-rooted values, and a unique
30 political structure/system such as China can be different from that in developed countries. As
31 numerous road crashes involving SRPG drivers have been documented in the Chinese media,
32 the need to understand the underlying reasons for their unique driving behaviours and
33 attitudes is exigent.

34 Some studies have investigated the relationship between the financial status of the driver and
35 his/her tendency to commit driving violations. For instance, Shinar et al. (2001) reported that
36 for US adult drivers, the higher their incomes, the less likely they were to report observing
37 speed limits. Apart from the income level of drivers, the economic background of drivers’
38 families might also play a role in their driving attitudes and behaviours. In China, recent
39 severe road crashes involving drivers with a rich family background were possibly and
40 partially resulted from these drivers’ favourable attitudes towards dangerous driving (Wang
41 & Zheng, 2014). Therefore, a link may exist between the economic background of young
42 drivers and the level of their risky attitudes and behaviours on the road. In China, since the
43 economic wellbeing of many families has improved dramatically in such a short time period,
44 which enables them to purchase a car for the first time (Fleiter & Watson, 2015), it is possible
45 that family factors may have important influence on young Chinese drivers’ risky attitudes
46 and driving behaviours (Fleiter et al., 2011). However, no research has yet examined such
47 influence.

1 Additionally, the political background of drivers' families is another important factor worthy
2 of consideration for Chinese drivers, and has not been investigated previously. In China, the
3 political status of government officers is classified into 12 levels, and the power they hold
4 may affect their specific duties and other local public administration practices, such as traffic
5 safety management. However, it seems that the children of some of these public servants
6 appear to regard their parents' political power as a shield against being punished by laws or
7 regulations (Song & Deng, 2012). Even worse, some of them appear to have formed a
8 potential consciousness that they have the "privilege" to do something that others cannot do,
9 just like the young driver described in the last section. As noted above, political background
10 has not previously been included in road safety studies. However, numerous cases of recent
11 severe road crashes in China have involved young drivers whose parents or close relatives
12 hold political power, as discussed above. This demonstrates the necessity of conducting
13 research that aims to examine the political backgrounds of Chinese young drivers as another
14 factor that may impact upon their driving behaviours and attitudes.

15 These research gaps discussed above motivated the current research. Specifically, this
16 research aims to fill a gap in our knowledge regarding the role of economic and political
17 factors in road crashes involving Chinese young drivers, such that new policies could be
18 developed in order to diminish road crashes involving this driver group. Very few studies
19 have examined the association between drivers' attitudes and behaviours and their family
20 backgrounds. Towards this end, the remainder of this paper is organised as follows. Section 2
21 provides detail of the methodologies related to the survey design, data collection, and data
22 analysis; Section 3 presents the survey findings and analysis results; Section 4 discusses main
23 findings in relation to the literature, their interpretations and implications, and this study's
24 limitations; and Section 5 concludes this paper by pointing out future research.

25 **2. Method**

26 Using self-developed scales to measure economic and political background status as well as a
27 range of driving attitude, risky behaviour and demographic scales developed by other
28 researchers, this study implemented an online survey targeting Chinese young drivers to
29 investigate family economic and political background's impact on Chinese young drivers'
30 driving behaviours and attitudes. This section discusses the survey design, data collection
31 procedure, and data analysis methods.

32 **2.1 Survey participants and procedure**

33 The target population of this survey was Chinese people aged between 18 and 28 years old
34 with driving experience. This age range was chosen for two reasons: the officially recognised
35 age range for being an adolescent in China is from 14 to 28 (Baidu Zhidao, 2015a); and the
36 minimum age of being eligible for applying for a driver's license in China is 18 (Baidu
37 Zhidao, 2015b). The driving experience in this study was defined as the number of years the
38 participant had been driving. In addition, all participants were drivers of private cars (i.e.,
39 drivers of truck, taxi, bus, and motorcycle were excluded).

40 A third-party survey firm was contracted to administer the online survey (SOJUMP, 2015).
41 The quality of sample was assured in three ways: 1) Participant authenticity was checked
42 using mobile phone or email verifications; 2) IP address was controlled to ensure that a
43 respondent (with the same IP address, or username) could only answer the questionnaire once;
44 and 3) questionnaires with incomplete responses were excluded.

45 The survey was conducted in May 2015. To increase the response rate, as incentives the
46 survey firm offered participants credits that could be exchanged for gifts. The final sample
47 size was 476 consisting of 305 males and 171 females with an age range of 18 to 28 years.

1 The response rate of this survey was 15.8% (476 respondents out of 3022 delivered
2 questionnaires). Additional demographic details of the sample are presented in Section 3.1.1.

3 **2.2 Questionnaire development**

4 A copy of the questionnaire is provided in Appendix A.

5 **2.2.1 Driving attitude and risky behaviour scales**

6 The attitudinal and behavioural scales applied in the current study were developed by
7 Ulleberg and Rundmo (2003), and have also been applied to investigate the relationship
8 between human factors and young drivers' driving behaviours in several recent studies
9 conducted in Sweden and Norway (Ulleberg & Rundmo, 2002; Jern & Naslund, 2009;
10 Nayum, 2008).

11 The attitude scale includes three facets: Attitudes towards 'traffic flow versus rule obedience'
12 (measured by DR1-DR9; See Appendix A), 'Speeding' (measured by DR10-DR14), and
13 'Fun-riding' (measured by DR15-DR17). We replaced "mile" with "kilometre" in items
14 containing distance messages, because kilometre is the unit of measurement used for speed
15 limits in China. The attitudinal items are scored on a five-point Likert scale ranging from
16 1="strongly disagree" to 5="strongly agree". Higher scores reflect drivers' more dangerous
17 attitude towards driving.

18 Three behavioural sub-scales, Self-assertiveness (measured by RI1-RI5; See Appendix A),
19 Speeding (measured by RI6-RI11), and Rule violations (measured by RI12-RI14), were
20 employed to measure respondents' self-reported behaviour of traffic risk-taking. The
21 behavioural items are also scored on a five-point Likert scale ranging from 1="never" to
22 5="very often". Higher scores reflect drivers performing traffic risk-taking acts more often.
23 All the sub-scale scores were created by averaging the item scores that measured them.

24 **2.2.2 Economic background**

25 China is considered as a middle-income country according to World Bank (The World Bank,
26 2013) with many Chinese people living below the poverty line. Given this level of economic
27 disadvantage in China, private car owners are generally from relatively rich families.
28 Therefore, the income categories for this study were set to cover the medium and higher
29 income level groups based on the latest yearly gross income of an urban resident available
30 from the website of National Bureau of Statistics of China (National data, 2015). As the
31 average household size is 3 in China (National Data, 2015), the average monthly family
32 income of urban residents was calculated. As the calculated result showed, people in the
33 income level groups of 5000-10000 RMB (Renminbi), 10000-20000RMB, and more than
34 20000 RMB approximately represent the richer half of the whole population, and the
35 proportion of these 3 groups were approximately 4:1:1. To match the census data, we asked
36 the survey firm to sample participants from its panel based on this quota.

37 In addition, the economic status of respondents' parents was gathered. This was considered as
38 an important variable in order to assess the potential association between economic influence
39 and driving behaviours. As has been noted elsewhere, there have been accounts of
40 adolescents from rich families in China exhibiting what could be considered immature
41 thinking and beliefs that they can always handle trouble by using their parents' money and
42 influence (Wang & Zheng, 2014). The employment status of each respondent and that of their
43 parents were also collected. The Chinese government has officially classified all jobs into 8
44 main categories using a national standard (HRDC, 2015). We used these categories on the
45 questionnaire, along with the "no job" and "retired" options.

46 **2.2.3 Political background**

1 As noted earlier, Chinese mass media has recently reported numerous traffic crashes
2 involving drivers whose parents or close relatives hold considerable political power (Wang &
3 Zheng, 2014). Thus, information on the political background of each respondent was also
4 collected.

5 China has a specific and strict political system that defines the administrative level of
6 government officers on various positions (Baidu Zhidao, 2015c). Based on this system, we
7 asked respondents to indicate the specific administrative level of their parents or close
8 relatives if one of them does hold a political status. Moreover, the perception of respondents
9 to the political power held by their parents or close relatives and their possible experiences of
10 benefiting from this special power were also evaluated by carefully developed questions.
11 Respondents were asked to indicate “the impact of your ‘parents’/close relatives’ political
12 power on your life” on a scale ranging from “no impact” to “large impact”, and “Have you
13 benefited from your parents’/close relative’s political power” on a scale ranging from “never”
14 to “always”. These items were constructed especially for this study, since no such items
15 appear to have been used in research previously.

16 **2.2.4 Demographic and other information**

17 Demographic information was also collected, including gender, age, the highest education
18 level and city of the usual residency. Although it is hard to obtain official data about the
19 proportion of male to female drivers in the population of Chinese young driver, some
20 literature shows that there are more than twice as many men licensed as women in a typical
21 Chinese Province with a large driver population (e.g., Zhejiang Province: Men = 9,027,532
22 and women = 3,929,569) (Fleiter et al., 2013). Thus, the ratio 2:1 of male to female drivers
23 was considered to be reasonable for quota selection in this study. Also, respondents were
24 requested to indicate how many traffic violations they had committed in the previous year, as
25 well as the number of hours they usually drive per week in order to ensure that we recruited
26 people with sufficient driving experience.

27 **2.3 Statistical Analysis**

28 In this study, the potential relationships between Chinese young drivers’ attitudes &
29 behaviours and their economic background, political background and demographic factors
30 were investigated. The internal reliability of each sub-scale was assessed via Cronbach’s
31 alpha. And corresponding measurement models were built for key factors to further verify
32 their reliability. Correlation analysis was conducted for all the measured variables to examine
33 the association between each pair. Additionally, Student’s t-test and ANOVA analysis
34 (Analysis of variance) were conducted to examine differences between groups with different
35 family backgrounds. Then the factor structure for driving attitude, risky behaviour, economic
36 background and political background sub-scales was established using structural equation
37 modelling (SEM). Measurement models and SEM were conducted using Mplus version 7.11
38 (Muthen, Muthen, 2012) while other analyses were implemented in IBM SPSS Statistics 21.

39 **3. Results**

40 **3.1 Basic characteristics of participants**

41 **3.1.1 Demographic information of participants**

42 Table 1 displays some basic demographic information of the participants. The majority of the
43 participants (79.8%) held a bachelor degree. The participants’ usual residencies are
44 categorised into 4 different levels of cities based on the China Mainland City Classification
45 Specification (Baidu Wenku, 2015a), which ranges from Level 1 (the smallest cities) to Level
46 4 (the largest cities, with population over 10 million and GDP over 750 billion RMB).

1 According to the result of this categorisation, 14.3% of the participants live in Level 1 cities,
 2 while 14.7%, 29.8% and 41.0% of the participants live in Level 2, Level 3 and Level 4 cities,
 3 respectively.

4 Table 1 also shows the number of traffic tickets that the participants reported receiving in the
 5 previous year. About half (50.5%) reported receiving between 1 and 3 tickets, and only 0.63%
 6 of the participants (i.e., three drivers) reported receiving 5 or more tickets in the last year.

7 In addition, Table 1 shows that most participants drive 5-10 hours (36.6%) and 10 to 20 hours
 8 (37.0%) per week, suggesting a sample of young Chinese people with regular driving
 9 experience.

10 *Table 1 Demographic information of participants*

Gender Proportion (%)	Male 64.1			Female 35.9		
Highest education level (%)	Senior high school 2.7	Junior college 1.9	Undergraduate degree 79.8	Master degree 15.3	PhD degree 0.2	
Residency city level* (%)	Level 1 14.3	Level 2 14.7	Level 3 29.8	Level 4 41.0		
Received traffic tickets last year (%)	0 46.0	1 20.0	2 20.4	3 10.1	4 2.9	≥ 5 0.6
Driving hours per week (%)	≤ 5 17.9	5.01-10 36.6	10.01-20 37.0	> 20 8.6		

11 * Level 1 refers to the smallest cities; Level 4 refers to the biggest cities.

12 **3.1.2 Economic background of participants**

13 Table 2 shows the distribution of the participants' reported personal and parental monthly
 14 income. As illustrated, the proportion of the three groups (5001-10000RMB, 10001-
 15 20000RMB and above 20000RMB) are 60.29%, 22.27% and 17.44% respectively. The
 16 reported pre-tax monthly income of most participants was between 2500 and 5000RMB
 17 (27.94%), and the pre-tax monthly income of their parents was concentrated in the 5001-
 18 10000RMB group (50.63%). Most participants reported themselves working as
 19 "professionals" (42.65%), their fathers also as "professionals" (21.43%), and their mothers as
 20 clerks (19.96%).

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2 *Table 2 Economic background of participants*

Participant's pre-tax monthly income (RMB*)	Proportion (%)	Parents' pre-tax monthly income (RMB)	Proportion (%)
≤2500	4.0	≤5000	12.2
2501-5000	27.9	5001-10000	50.6
5001-7500	26.9	10001-15000	22.3
7501-10000	18.5	15001-20000	12.2
10001-20000	17.2	20001-40000	2.7
20001-50000	5.5	40001-100000	0
>50000	0	>100000	0

3 * 1USD ≈ 6.58RMB

4

5 **3.1.3 Political background of participants**

6 As Table 3 displays, one third of the participants (32.8%) reported that their parents and/or
7 close relatives hold a political status. Most of these politicians were reported to be at the
8 section chief level (41.7%), which is the second lowest level in the Chinese administrative
9 level system. Among the third of participants who reported political status of their
10 parents/close relatives, most reported “little impact” (37.8%) or “some impact” (39.7%) of
11 their parents'/close relatives' political power on their lives. Only 13.5% of the participants
12 reported that the power of their parents/relatives has no impact on their own life, and 9%
13 reported a large impact. Furthermore, 31.4% of the participants admitted that sometimes they
14 have actually benefited from that power.

15 *Table 3 Political background of participants*

Parents/close relatives hold a political status or not (%)	Yes		No		
	32.8		67.2		
Administrative level* (%)	Director of an Institute	Section Chief	Division Head	Head of a Department or above	
	13.5	41.7	35.9	9.0	
Power impact level (%)	No	Little	Some	Large	Not sure
	13.5	37.8	39.7	9.0	0
Frequency of benefiting from political power (%)	Never	Rarely	Sometimes	Often	Always
	18.6	46.2	31.4	3.2	0.6

16 * Director of an Institute is the lowest administrative level while Head of a Department is the most senior in
17 these four levels.

18 **3.2 Reliability analysis of sub-scales**

1 A reliability analysis of each sub-scale on driving attitudes and risky behaviours was
 2 conducted to check if any of the items that measure each sub-scale should be kept or deleted
 3 to improve the reliability performance of the overall scale. Table 4 shows the final scales with
 4 their number of items, mean scores and Cronbach's alpha co-efficients. Most of the sub-
 5 scales performed well with alpha values above 0.7 (Tavakol & Dennick, 2011). These
 6 findings were consistent with outputs of the confirmatory factor analysis conducted using
 7 Mplus (Muthen & Muthen, 2012).

8 *Table 4 Number of items, mean scores and Cronbach's alpha for scales of Driving Attitudes*
 9 *and Risky Behaviours*

Scales	Number of items	Mean score (range 1-5)	S.D.	Cronbach's alpha
<i>Driving Attitudes</i>				
Traffic flow vs. rule obedience	9	2.26	0.66	0.850
Speeding	5	2.35	0.81	0.864
Fun-riding	3	2.24	0.81	0.704
<i>Risky Behaviours</i>				
Self-assertiveness	5	1.87	0.66	0.842
Speeding	6	2.00	0.65	0.847
Rule violations	3	1.79	0.64	0.672

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11 **3.3 Comparative correlation analysis for participants with and without political**
 12 **background**

13 To explore the associations between the key variables in the study, correlational analyses
 14 were conducted. As both continuous and ordinal variables were applied in this study,
 15 Spearman's rho value was applied to check the correlation degree of each pair (Hauke &
 16 Kossowski, 2011). More specifically, to check the effect of political power on driving
 17 attitudes and risky behaviours, correlation analysis was conducted for the participants whose
 18 parents/close relatives hold political power and then for the participants who indicated no
 19 association with political power.

20 The correlation matrices of driving attitude scales, risky behaviour scales, income status and
 21 power status for participants whose parents/close relatives hold political power, and for
 22 participants whose parents/close relatives do not hold political power are included in
 23 Appendix B. As can be seen from these correlation matrices, there are obvious differences in
 24 driving attitudes and risky behaviours between participants with or without family political
 25 background at the bivariate level.

26 First, for the participants with a familial political background, their personal incomes were
 27 not significantly correlated with any attitudinal subscales or risky driving behaviours.
 28 However, for the participants without a familial political background, their personal income
 29 was negatively and significantly correlated with the "traffic flow vs. rule obedience" attitude
 30 sub-scale, which means that this group of participants reported more favourable attitudes
 31 towards obeying traffic rules as their income increased. Second, the parental income of the
 32 participants whose parents/ close relatives had political power was negatively and
 33 significantly associated with fun-riding attitudes and speeding behaviours, which indicates
 34 that the higher their parents' income, the less favourable attitudes towards fun-riding and less
 35 speeding behaviour they reported. For the participants without a familial political background,

1 the parental income was not significantly associated with any attitudinal or behavioural
2 subscales.

3 For the participants with a familial political background, there was no significant correlation
4 between age and driving attitude or risky behaviour sub-scales. However, age was
5 significantly and negatively correlated with “traffic flow vs. rule obedience” attitude sub-
6 scale for the participants without a familial political background, which means that younger
7 participants without a familial political background reported more favourable attitude towards
8 breaking traffic rules.

9 Driving experience was not significantly associated with any driving attitude or risky
10 behaviour sub-scales for the participants with a familial political background. However, it
11 was significantly and negatively correlated with “traffic flow vs. rule obedience” attitude for
12 the participants without a familial political background. This result indicates that for the
13 participants without a familial political background, the more driving experience they had,
14 the more favourable attitude towards obeying traffic rules they reported. The education level
15 of participants was significantly and negatively correlated with all three driving attitude sub-
16 scales and speeding behaviours for the participants with a familial political background,
17 which means these participants with higher education levels reported safer attitudes towards
18 driving and less speeding behaviours, however, for the participants without a familial
19 political background there was no significant correlation between education level and any
20 driving attitude or risky behaviour sub-scales.

21 The number of traffic infringement tickets the participants reported receiving in the previous
22 year was significantly and positively correlated with almost all attitude and behaviour sub-
23 scales for the participants with a familial political background, while for the participants
24 without a familial political background it is only significantly and positively correlated with
25 the three behaviour sub-scales. This means that the participants receiving traffic infringement
26 tickets without a familial political background did not significantly report more dangerous
27 attitudes towards driving, which is different from the participants with a familial political
28 background for whom the correlation was significant.

29 Gender was significantly and negatively correlated with “traffic flow vs. rule obedience”,
30 “fun-riding” attitudes and “self-assertiveness” behaviours for the participants with a familial
31 political background. This finding is similar to that for the participants without a familial
32 political background, which means that the male participants reported more favourable
33 attitudes towards breaking traffic rules, fun-riding and more assertive driving behaviours than
34 the female participants in both groups.

35 **3.4 Examining group differences using family background factors**

36 To examine possible factors that might influence driving attitudes and risky behaviours,
37 ANOVA analyses were conducted for all driving attitude and risky behaviour sub-scales
38 using economic background sub-scales (Personal income and Parental income) for the
39 participants without a familial political background, and using both economic background
40 sub-scales and political background sub-scales (Power Level, Power Impact and Power
41 Benefits) as factors for the participants with a familial political background, respectively.
42 However, only findings for self-reported speeding using Power Impact and Power Benefits as
43 the factors were significant. Thus, they are the only ones reported here.

44 As shown in Table 5, when Power Impact was applied as the factor, the mean difference of
45 speeding behaviour for the participants with a familial political background is significant (p
46 = .008), which indicates that the participants who reported more impacts from the familial
47 political power in their life also reported speeding more often. Note that as the participants

1 who reported “Large impact” only account for 9.0%, which is much smaller than other
 2 groups, “Some impact” and “Large impact” were combined as one group.

3 *Table 5 ANOVA using Power Impact as the factor (n = 156)*

Variable	Impact level of political power (answer score)	Percentage of sample	Mean scores	F
Speeding behaviours	No impact (1)	13.5	1.75	4.969**
	Little impact (2)	37.8	1.86	
	Some impact & Large impact (3&4)	48.7	2.14	

4 ** Mean squares are significantly different at the 0.01 level.

5 As shown in Table 6, when Power Benefits was applied as the factor, the mean difference
 6 across Power Benefits categories for the participants with a familial political background is
 7 significant regarding speeding attitude (p = .029) and speeding behaviour (p = .010),
 8 respectively. This finding indicates that for the participants with a familial political
 9 background, their responses to benefits obtained from that power significantly influence their
 10 attitudes towards speeding and reported speeding behaviour. Since the participants who
 11 reported “Often” and “Always” only accounted for 3.2% and 0.6% respectively for speeding
 12 attitude, the categories of “Sometimes”, “Often” and “Always” were combined. Similarly,
 13 “Sometimes”, “Often” and “Always” were also combined as one group for speeding
 14 behaviour.

15 *Table 6 ANOVA using Power Benefits as the factor (n = 156)*

Variable	Frequency of benefiting from power (answer score)	Percentage of sample	Mean scores	F
Speeding attitude	Never (1)	18.6	2.06	3.615*
	Rarely (2)	46.2	2.23	
	Sometimes, Often & Always (3,4&5)	35.3	2.51	
Speeding behaviour	Never (1)	18.6	1.71	4.798**
	Rarely (2)	46.2	1.95	
	Sometimes, Often & Always (3,4&5)	35.3	2.15	

16 ** Mean squares are significantly different at the 0.01 level.

17 * Mean squares are significantly different at the 0.05 level.

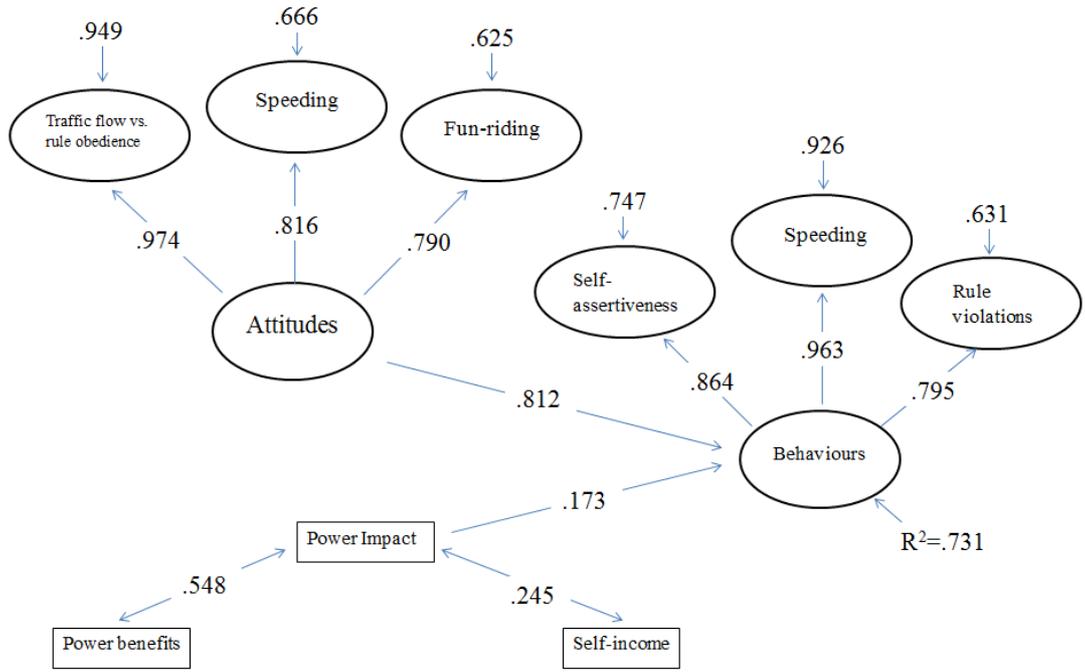
18 **3.5 Structural equation modelling analysis**

19 To further examine the relationships between the variables under investigation, a structural
 20 equation modelling analysis was conducted including driving attitude sub-scales (traffic flow
 21 vs. rule obedience, speeding, fun-riding), risky behaviour sub-scales (self-assertiveness,
 22 speeding, rule violations), economic background sub-scales (self-income and parents’ income)
 23 and political background sub-scales (Power Level, Power Impact and Power Benefits). Two
 24 models were developed: one for the participants who reported a familial political background
 25 and one for the participants who did not.

26 **3.5.1 For the participants whose parents/close relatives hold political power**

1 A standard SEM development procedure was followed, and Figure 1 shows the final SEM
 2 path diagram that depicts the relationship between driving attitude, risky behaviour,
 3 economic background and political background sub-scales for the participants who reported
 4 that their parents/close relatives held political power. The model represented in Figure 1
 5 explained 73.1% of the total variance in risky behaviours. The root mean square error of
 6 approximation (RMSEA) is .065, which is considered as a fair fit (Steiger, 2007); the
 7 standardised root mean square residual (SRMR) is .066, which is also considered acceptable
 8 (Hu & Bentler, 1999).

9 As shown in Figure 1, attitudes towards risky driving is significantly and positively correlated
 10 with risky behaviours ($\beta = .812$, $p < .001$), which indicates that for the participants with a
 11 familial political background, those who reported more risky attitudes towards driving also
 12 reported more risky behaviours. Power Impact shows a significant relationship ($\beta = .173$, p
 13 $= .021$) with risky behaviours. This finding suggests that for the participants whose
 14 parents/close relatives hold political power, the more impacts from that power they reported,
 15 the more dangerous driving behaviours they reported performing. Power Impact is also
 16 significantly correlated with Power Benefits ($r = .548$, $p < .001$) and Self-income ($r = .245$, p
 17 $< .001$) in the model, which indicates that the participants who reported higher impacts
 18 from their parents'/close relatives' political power also reported receiving benefits more frequently
 19 from this power as well as a higher personal income.



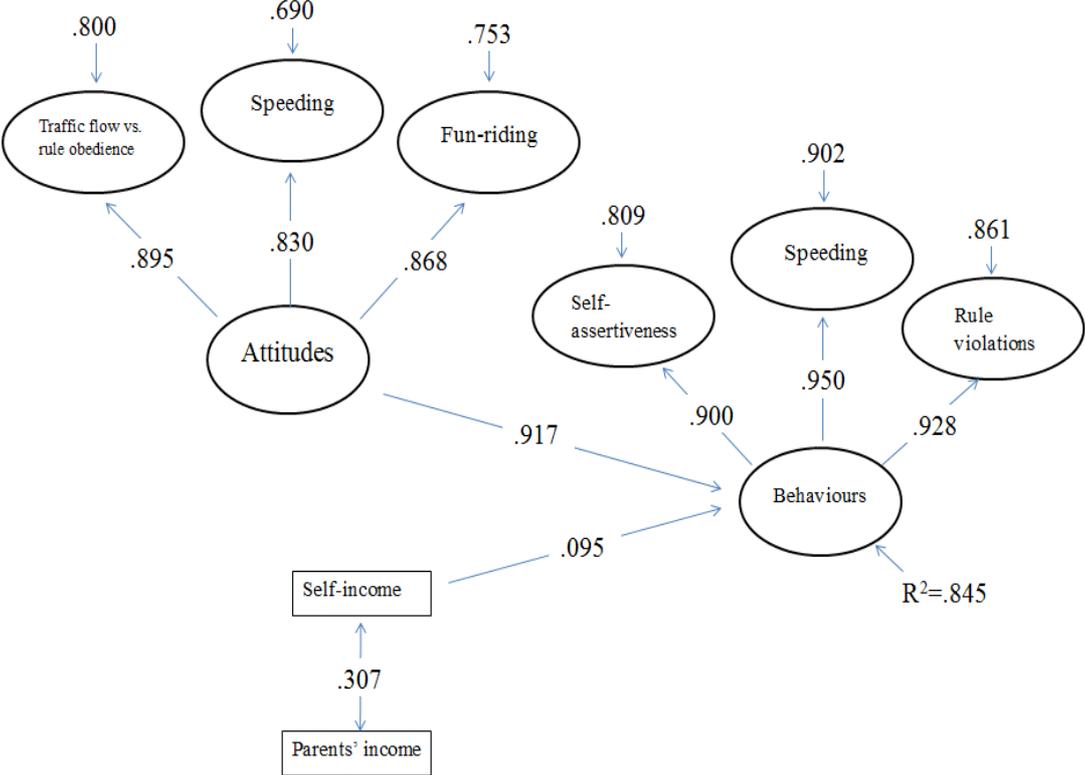
20
 21 *Figure 1 SEM path diagram for the participants whose parents/close relatives hold political*
 22 *power*

23 **3.5.2 For the participants whose parents/close relatives do not hold political power**

24 Figure 2 shows the final SEM path diagram that depicts the relationship between driving
 25 attitude, risky behaviour and economic background sub-scales for the participants who
 26 reported that their parents/close relatives did not hold political power. This model explained
 27 84.5% of the total variance in risky behaviours. The RMSEA value of this model is .066,
 28 which was considered as a fair fit (Steiger, 2007); the SRMR value of this model is .058,
 29 which was also considered acceptable (Hu & Bentler, 1999).

1 As shown in Figure 2, attitudes towards risky driving is significantly and positively correlated
 2 with risky behaviours ($\beta = .917, p < .001$), which indicates that for the participants without a
 3 familial political background, those who reported more risky attitudes towards driving also
 4 reported more risky behaviours. Self-income shows a significant relationship ($\beta = .095, p$
 5 $= .020$) with risky behaviours, which indicates that for the participants whose parents/close
 6 relatives do not hold political power, they reported performing risky behaviours more often as
 7 their personal income increased. Self-income is also significantly correlated with Parents'
 8 income ($r = .307, p < .001$) in the model, which indicates that the participants who reported
 9 higher personal incomes also reported higher parental incomes.

10



11
 12 *Figure 2 SEM path diagram for the participants whose parents/close relatives do not hold*
 13 *political power*

14 **4. Discussion**

15 This research contributes to filling the gap in understanding the role of political and economic
 16 factors in road safety attitudes and behaviours. Although economic and political backgrounds
 17 are hard to change, understanding of relationships between them and road safety has the
 18 potential to help develop relevant policies, education and training programs to promote road
 19 safety among young drivers with an economically or politically powerful family background.
 20 In addition, the findings from the current study could motivate road safety researchers to
 21 consider including economic and political influence factors in their research.

22 Based on an online survey of a sample of young Chinese drivers, various statistical
 23 techniques have been used to scrutinize economic and political backgrounds' impact on
 24 driving behaviours and attitudes, and consistent results have been obtained. Specifically, our
 25 analyses indicate that the participants who reported more impact on their life from a political
 26 background reported higher personal incomes, which is probably because those participants

1 with a political background can obtain more and better job opportunities with the help from
2 this power. This group of participants also reported more risky driving behaviours. For the
3 participants without a familial political background, the SEM results indicate that the
4 participants who reported higher personal incomes also reported more risky driving
5 behaviours. This finding is consistent with previous studies. For example, Wang & Zheng
6 (2014) and Shinar et al. (2001) reported that young drivers with higher personal incomes are
7 more likely to disobey traffic rules.

8 There were also many differences found between the participants with and without a political
9 background. For the participants without a familial political background, younger drivers
10 reported more favourable attitude towards breaking laws to keep traffic flowing than older
11 drivers, while age had no significant correlations with any attitude or behaviour sub-scales for
12 the participants with a familial political background. Similar results were found for driving
13 experience: for the participants without a familial political background, less driving
14 experience was associated with more favourable attitudes towards breaking rules to keep
15 traffic flowing. However, no significant correlation with attitude or behaviour sub-scales was
16 found for participants with a familial political background. One possible interpretation of
17 these findings is that young drivers with a powerful family background can seek to shield
18 themselves from the law by using their family's political influence. In other words, they can
19 avoid potential criminal punishment by utilising the political 'rights' owned by their family
20 members. Consequently, they may be less likely to experience penalties for breaking traffic
21 laws, and therefore less likely to alter their bad driving behaviours as they become older or as
22 they drive more. In terms of gender, the female drivers reported more favourable attitudes
23 towards safe driving and less risky behaviours for both groups (i.e., with and without a
24 powerful family background), which is in line with previous studies (Jiménez-Mejías, et al.,
25 2014).

26 Based on the findings for the participants with a familial political background, we can
27 conclude that those who reported more impact on their life from their political background
28 also reported more risky driving behaviours. For the participants from non-political families,
29 they reported more risky driving behaviours as they reported higher parental incomes. These
30 findings are not surprising because in the contemporary Chinese society, it is not uncommon
31 that the second generation of people with economic or political power (SRPG) can relatively
32 easily escape would-be-deserved punishments of their bad driving behaviours because
33 consequences from the road crashes caused by them can often be handled and resolved
34 privately due to their parents' interference (Wang & Zheng, 2014).

35 In terms of the three political background factors that were developed specifically for this
36 study, the SEM analysis indicates that the participants who reported more impact on their life
37 from the political background also reported risky driving behaviours more often. However,
38 there is no direct significant association between Power Level and risky behaviours, or
39 between Power Benefits and risky behaviours. One possible explanation for this finding is
40 that while reporting the level of parents'/close relatives' political position is objective,
41 reporting of the impact of that power on their life is a subjective perception, which may be
42 more related to behaviours. Another potential explanation is that participants were not
43 specifically asked if they had benefited from the political power in relation to driving; rather
44 the items asked about benefits more broadly. Therefore, participant responses about
45 benefiting may not relate to avoiding traffic penalties at all. In addition, the Chinese
46 government has publicly announced in recent years that it is determined to stamp corruption
47 out of the contemporary Chinese society with strict measures. A number of high-profile
48 (former) government officials have been arrested and jailed because of corruption and power
49 abuse (Wang Yi Education, 2014). This anti-corruption campaign may alert some

1 government officials, who may previously have behaved differently, to more cautiously
2 examine and manage their and their family members' behaviours. Moreover, the Central
3 Disciplinary Inspection Team has issued a warning that any rule-violating activities of a
4 government official's family member should be treated as an important information source
5 that may lead to an anti-corruption investigation on the government official himself or herself
6 (Shen Gang Zai Xian, 2015). This situation may also prompt some government officials to
7 warn and monitor their family members to behave themselves. Indeed, some recent fatal road
8 crashes caused by some government officials' children have led the government to
9 investigate these officials' own behaviours (Song & Deng, 2012) after the mass media and
10 the public have revealed and subsequently scrutinised the offenders' family background.
11 Thus, the participants of our survey with a political family background may have been
12 instructed by their parents not to break any public rules because of the need to protect their
13 parents' reputation, and the fear of any bad behaviour leading their parents to become the
14 subject of the current anti-corruption campaign. However, since we did not ask specifically
15 about this issue, these observations are speculative.

16 The analysis also showed that better educated young drivers with a familial political
17 background reported more favourable attitudes towards driving safely, while the correlation
18 was not significant for the participants without a familial political background. This finding
19 may point out a way of decreasing the road crash rate for young drivers with a political
20 background, which is to strengthen road safety education not only in driver training schools,
21 but also in universities (maybe even in senior-high schools before they reach the minimum
22 age requirement of applying for a driving license). Since there is no concrete evidence to
23 support this, additional research is needed to confirm this speculative assessment of the
24 findings.

25 We acknowledge that this study has a number of limitations that should be borne in mind
26 when interpreting the results. As the survey collected some sensitive information such as
27 traffic violations, income status, and political position, the study was conducted with the
28 assumption that all participants would respond with integrity and honesty. However, as all
29 data were self-reported, it is acknowledged that there was a possibility for participants to
30 conceal their real thoughts, thereby creating a social desirability bias. As a new wave of anti-
31 corruption measures have been applied within each level of the Chinese government sectors
32 in recent years, it is possible that some government officials and their family members
33 change their behaviour in order not to attract any attention from the media or the public.
34 Similarly, it is possible that participants with a familial political background answered these
35 questions in a biased way to prevent their parents from experiencing trouble, despite the fact
36 that it was emphasised at the beginning of the questionnaire that responses were anonymous.
37 The incentive scheme offered by the survey company might also affect the participation.
38 However, eliminating all social desirability biases is difficult and is a common issue
39 associated with self-reported data. By building a sample with adequate participants (476 in
40 total), the reliability of statistical findings based on it could still be considered as reasonable.
41 The self-developed economic, political background scales and relevant findings also require
42 further validation in future research.

43 **5. Conclusion**

44 While the sample used in the current research was drawn from China, the study's findings,
45 particularly in relation to the impact of political influence, may be relevant to other countries,
46 particularly those countries where corruption is a significant issue and where adequate
47 legislation does not exist to assist police to enforce traffic laws. As documented in the latest
48 WHO Global Status Report on Road Safety (2015), more work is needed in many countries

1 to address issues such as poor traffic law enforcement that may be linked to poor resourcing,
2 inadequate legislation, and/or corruption. It is recognised that the political system differs in
3 each country and that China has a unique political context. However, issues such as
4 inadequate legislation, enforcement, public understanding of the need for enforcement, and
5 the presence of corruption within government agencies are common to many low and middle
6 income countries that disproportionately shoulder the road trauma burden. It is hoped that the
7 current research offers some insight into the association between family political & economic
8 background and road user behaviours.

9 As very few studies have investigated the impact on road safety of economic and political
10 backgrounds, future research could include participants from other developing countries to
11 make more extensive comparisons and allow for more generalised conclusions to be made.
12 Specifically, for novice drivers in developing countries such as China, studies focusing on the
13 influences from more comprehensive factors on their road safety performance are desired to
14 further improve road safety development in such countries.

15

16

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22

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19 **Appendix A: The questionnaire**

20 **SCREENING QUESTIONS**

- 21 SQ1. What is your age?
- 22 (1) Younger than 18 years **(Survey closed)**
- 23 (2) 18-20 years
- 24 (3) 21-23 years
- 25 (4) 24-26 years
- 26 (5) 27-28 years
- 27 (6) Older than 28 years **(Survey closed)**
- 28 SQ2. How long is your driving experience?
- 29 (1) None **(Survey closed)**
- 30 (2) Less than or equal to one year
- 31 (3) More than one year but no more than three years
- 32 (4) More than three years but no more than five years
- 33 (5) More than five years but no more than ten years
- 34 (6) More than ten years
- 35 SQ3. Which driver type are you in for general cases?
- 36 (1) Private car
- 37 (2) Van **(Survey closed)**
- 38 (3) Truck **(Survey closed)**
- 39 (4) Taxi **(Survey closed)**
- 40 (5) Bus **(Survey closed)**
- 41 (6) Other **(Survey closed)**

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DRIVING ATTITUDES

- The questions in this section ask for information on your attitudes towards driving.
- Each item in this section is answered by choosing one of the following options: (1) Strongly disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly agree
- DR1. There are many traffic rules which cannot be obeyed in order to keep up the traffic flow.
 - DR2. Sometimes it is necessary to bend the rules to keep traffic going.
 - DR3. It is more important to keep up the traffic flow rather than always follow the traffic rules.
 - DR4. It is better to drive smoothly than always follow the traffic rules.
 - DR5. Sometimes it is necessary to break the traffic rules in order to get ahead.
 - DR6. Sometimes it is necessary to ignore violations of traffic rules.
 - DR7. Sometimes it is necessary to take chances in the traffic.
 - DR8. Sometimes it is necessary to bend the traffic rules to arrive in time.
 - DR9. A person who takes chances and violates some traffic rules is not necessarily a less safe driver.
 - DR10. If you have good skills, speeding is OK.
 - DR11. I think it is OK to speed if the traffic conditions allow you to do so.
 - DR12. Driving 10 or 15 km/h above the speed limit is OK because everyone does it.
 - DR13. If you are a safe driver, it is acceptable to exceed the speed limit by 10 km/h on highways.
 - DR14. It is acceptable, when driving on a highway, to exceed the speed limit by 10km/h if there are no other vehicles nearby.
 - DR15. Adolescents have a need for fun and excitement in traffic.
 - DR16. Speeding and excitement belong together when you are driving.
 - DR17. To me, speeding while driving is fun.

RISKY BEHAVIOURS

- The questions in this section ask for your frequencies on risky behaviours while driving.
- Each item in this section is answered by choosing one of the following options: (1) Never (2) Rarely (3) Sometimes (4) Often (5) Very often
- RI1. I drive recklessly because others expect me to do it.
 - RI2. Drive fast to show others that I am tough enough.
 - RI3. Drive fast to show others I can handle the car.
 - RI4. Break traffic rules due to peer pressure.
 - RI5. Drive fast because the opposite sex enjoys it.
 - RI6. Exceed the speed limit in build-up areas (by more than 10 km/h)
 - RI7. Exceed the speed limit on country roads (by more than 10 km/h)
 - RI8. Overtake the car in front when it is driving at the speed limit.

- 1 RI9. Drive too close to the car in front.
- 2 RI10. Bend the traffic rules in order to get ahead in traffic.
- 3 RI11. Ignore traffic rules in order to get ahead in traffic.
- 4 RI12. Drive on a yellow light when it is about to turn red.
- 5 RI13. Disregard red light on an empty road.
- 6 RI14. Drive the wrong way down a one-way street.

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8

ECONOMIC BACKGROUND

9 The questions in this section ask for information on your economic background.

10 EC1. What is your monthly pre-tax income? (Chinese Yuan)

- 11 (1) No more than 2500
- 12 (2) More than 2500 but no more than 5000
- 13 (3) More than 5000 but no more than 7500
- 14 (4) More than 7500 but no more than 10000
- 15 (5) More than 10000 but no more than 20000
- 16 (6) More than 20000 but no more than 50000
- 17 (7) More than 50000

18 EC2. What is your parents' monthly pre-tax income?

- 19 (1) No more than 5000
- 20 (2) More than 5000 but no more than 10000
- 21 (3) More than 10000 but no more than 15000
- 22 (4) More than 15000 but no more than 20000
- 23 (5) More than 20000 but no more than 40000
- 24 (6) More than 40000 but no more than 100000
- 25 (7) More than 100000

26 EC3. What is the type of your job?

- 27 (1) Principal of government offices, party organisation, enterprise and public institutions
- 28 (2) Professionals
- 29 (3) Clerks
- 30 (4) Commerce and customer service
- 31 (5) Production personnel for agriculture, forestry, stock raising, fishery and water conservancy
- 32 (6) Operating personnel for production and delivery equipment
- 33 (7) Army personnel
- 34 (8) Others
- 35 (9) I have no job currently.

36 EC4. What is the type of your father's job?

- 37 (1) Principal of government offices, party organisation, enterprise and public institutions
- 38 (2) Professionals
- 39 (3) Clerks
- 40 (4) Commerce and customer service
- 41 (5) Production personnel for agriculture, forestry, stock raising, fishery and water conservancy
- 42 (6) Operating personnel for production and delivery equipment
- 43 (7) Army personnel
- 44 (8) Others
- 45 (9) Retired/unemployed currently

- 1 EC5. What is the type of your mother's job?
- 2 (1) Principal of government offices, party organisation, enterprise and public institutions
- 3 (2) Professionals
- 4 (3) Clerks
- 5 (4) Commerce and customer service
- 6 (5) Production personnel for agriculture, forestry, stock raising, fishery and water conservancy
- 7 (6) Operating personnel for production and delivery equipment
- 8 (7) Army personnel
- 9 (8) Others
- 10 (9) Retired/unemployed currently

11

12

POLITICAL BACKGROUND

13 The questions in this section ask for information on the political status held by your parents and

14 close relatives (if any).

15 PO1. Do your parents or close relatives hold a political status?

- 16 (1) Yes (GO TO PO2)
- 17 (2) No (GO TO DE1)

18 PO2. What is the administrative level of his/her position?

- 19 (1) Director of an institute (suo zhang)
- 20 (2) Section chief (ke zhang)
- 21 (3) Division head (chu zhang)
- 22 (4) Head of a department (ting zhang) and above

23 PO3. What is the impact of your parents'/close relatives' political power on your life?

- 24 (1) No impact
- 25 (2) Little impact
- 26 (3) Some impact
- 27 (4) Large impact
- 28 (5) Not sure

29 PO4. Have you been benefited from your parents'/close relative's political power?

- 30 (1) Never
- 31 (2) Rarely
- 32 (3) Sometimes
- 33 (4) Often
- 34 (5) Always

35

DEMOGRAPHICS

36 The questions in this section ask for information on your background.

37 DE1. What is your gender?

- 38 (1) Male
- 39 (2) Female

40 DE2. What is your highest education level?

- 41 (1) Primary school
- 42 (2) Junior high school
- 43 (3) Senior high school
- 44 (4) Undergraduate degree
- 45 (5) Master degree
- 46 (6) PhD degree

- 1 (7) Other (Please specify _____)
- 2 DE3. What is the name of the city/town/village that your usual residency is located?
- 3 Please specify _____
- 4 DE4. How many traffic tickets have you received in the last year?
- 5 (1) 0
- 6 (2) 1
- 7 (3) 2
- 8 (4) 3
- 9 (5) 4
- 10 (6) 5 or more than 5
- 11 DE5. How many hours do you usually drive per week?
- 12 (1) No more than 5 hours
- 13 (2) More than 5 hours but no more than 10 hours
- 14 (3) More than 10 hours but no more than 20 hours
- 15 (4) More than 20 hours
- 16
- 17
- 18
- 19
- 20
- 21